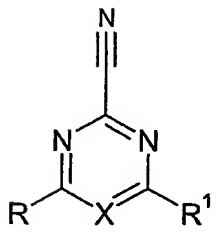
CLAIMS

1. Use use of a compound of formula (I)



(I)

in which:
X is N or CA where A is hydrogen, halogen, CHR^2R^3, OR^2, NR^2R^3, SR^2;

R^2 and R^3 are independently hydrogen, C_{1-6} alkyl or C_{3-6} cycloalkyl both of which can optionally contain one or more O, S or NR^4 groups where R^4 is hydrogen or C_{1-6} alkyl, and can be optionally substituted by aryl, heteroaryl, NR^5R^6 where R^5 and R^6 together with the nitrogen atom to which they are attached form a 4-7 membered ring optionally containing a further O, S, NR^4, or R2 and R3 together with the nitrogen atom to which they are attached form a 4-7 membered ring optionally containing a further O, S, NR^4 group, or R2 and R3 are aryl or heteroaryl groups, both aryl and heteroaryl groups being optionally substituted by halogen, amino, hydroxy, cyano, nitro, carboxy, $CONR^7R^8$, $SO_2NR^7R^8$, SO_2R^4, trifluoromethyl, $NHSO_2R^4$, $NHCOR^4$, ethylenedioxy, methylenedioxy, C_{1-6} alkyl, C_{1-6} alkoxy, NR^7R^8 or SR^7 where R^7 and R^8 are independently hydrogen or C_{1-6} alkyl;

R and R^1 are independently a group $Y(CH_2)pR^9$ where p is 0, 1, 2 or 3 and Y is O or NR^{10} where R^{10} is hydrogen, C_{1-6} alkyl or C_{3-6} cycloalkyl;
and R^9 is hydrogen, C_{1-6} alkyl which can optionally contain one or more O, S or NR^4 groups where R^4 is hydrogen or C_{1-6} alkyl, or a 3 to 7-membered saturated ring optionally containing a carbonyl group, one or more O, S or N atoms, or an aryl or heteroaryl group containing one to four heteroatoms selected from O, S or N, the saturated ring, aryl and heteroaryl groups all being optionally substituted by halogen, amino, hydroxy, cyano, nitro, carboxy, $CONR^7R^8$, $SO_2NR^7R^8$, SO_2R^4, trifluoromethyl, $NHSO_2R^4$, $NHCOR^4$,

ethylenedioxy, methylenedioxy, C_{1-6} alkyl, C_{1-6} alkoxy, SR^5 or $NR^{11}R^{12}$ where R^{11} and R^{12} are independently hydrogen, C_{1-6} alkyl or together with the nitrogen atom to which they are attached form a 5- or 6-membered saturated ring optionally containing a further O, S or NR^4 group;

or R/R^1 is a group $NR^{10}(CHR^{10})$ $CONR^2R^3$ or $NR^{10}(CH_2)_qCONR^2R^3$ where q is 1, 2 or 3;

or R/R^1 is a group $NR^{13}R^{14}$ where R^{13} and R^{14} together with the nitrogen atom to which they are attached form a 4 to 7-membered saturated ring optionally containing a carbonyl group, O, S or N atom and optionally substituted by C_{1-6} alkyl, amino, hydroxy, CO_2C_{1-6} alkyl, halogen, NR^5R^6, NR^7R^8, C_{1-6} alkyl$NR^{17}R^{18}$ where R^{17} and R^{18} are independently hydrogen or C_{1-6} alkyl, $CONR^{15}R^{16}$ where R^{15} and R^{16} are independently hydrogen or C_{1-6} alkyl, or optionally substituted by aryl, phenoxy, COphenyl, or a heteroaryl group, the latter four groups being optionally substituted by halogen, amino, hydroxy, cyano, nitro, carboxy, $CONR^7R^8$, $SO_2NR^7R^8$, SO_2R^4, trifluoromethyl, $NHSO_2R^4$, $NHCOR^4$, ethylenedioxy, methylenedioxy, C_{1-6} alkyl, C_{1-6} alkoxy, SR^5 or $NR^{11}R^{12}$ where R^{11} and R^{12} are independently hydrogen, C_{1-6} alkyl or together with the nitrogen atom to which they are attached form a 5- or 6-membered saturated ring optionally containing a further O, S or NR^4 group;

and pharmaceutically acceptable salts or solvates thereof, in the manufacture of a medicament for use in the inhibition of cathepsin S in a mammal such as man.

2. Use compound according to claim 1 in which X is CH, NHR^2, OR^2 where R^2 is hydrogen or C_{1-6} alkyl.

3. Use compound according to claim 1 or 2 in which R is a group $Y(CH_2)pR^7$ where p is 0 or 1 and Y is NR^8 where R^8 is hydrogen and R^7 is substituted phenyl.

4. Use compound according to any one of claims 1 to 3 in which R^1 is a group $NR^{13}R^{14}$ where R^{13} and R^{14} together with the nitrogen atom to which they are attached form a morpholine ring, piperidine or piperazine ring optionally substituted.

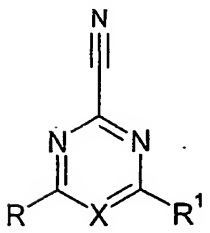
5. Use compound according to any one of claims 1 to 3 in which R^1 is a group NR^9R^{10} where R^{10} is H or C_{1-6} alkyl and R^9 is C_{1-6} alkyl which can optionally contain one or more O, S or NR^4 groups where R^4 is hydrogen or C_{1-6} alkyl.

6. Use according to claim 1 where the compound of formula (I) is selected from:

4-[(4-Chlorophenyl)amino]-6-(dimethylamino)-1,3,5-triazine-2-carbonitrile,
4-Morpholin-4-yl-6-(4-phenoxypiperidin-1-yl)-1,3,5-triazine-2-carbonitrile,
4-[(4-Chlorophenyl)amino]-6-morpholin-4-yl-1,3,5-triazine-2-carbonitrile,
4-(7-Azabicyclo[2.2.1]hept-7-yl)-6-[(4-chlorophenyl)amino]-1,3,5-triazine-2-carbonitrile,
4-[(4-Chlorophenyl)amino]-6-pyrrolidin-1-yl-1,3,5-triazine-2-carbonitrile,
4-[(4-Chlorophenyl)amino]-6-piperidin-1-yl-1,3,5-triazine-2-carbonitrile,
4-[(4-Chlorophenyl)amino]-6-(ethylamino)-1,3,5-triazine-2-carbonitrile,
4-[(4-Chlorophenyl)amino]-6-(3-hydroxypyrrolidin-1-yl)-1,3,5-triazine-2-carbonitrile,
4-[(4-Chlorophenyl)amino]-6-[(2-piperidin-1-ylethyl)amino]-1,3,5-triazine-2-carbonitrile,
4-[(4-Chlorophenyl)amino]-6-(4-phenylpiperidin-1-yl)-1,3,5-triazine-2-carbonitrile,
4-[(3-Chlorobenzyl)amino]-6-(dimethylamino)-1,3,5-triazine-2-carbonitrile,
4-Morpholin-4-yl-6-[(4-morpholin-4-ylphenyl)amino]-1,3,5-triazine-2-carbonitrile,
4-(2,3-Dihydro-1,4-benzodioxin-6-ylamino)-6-morpholin-4-yl-1,3,5-triazine-2-carbonitrile,
4-Morpholin-4-yl-6-(3-phenylpiperidin-1-yl)-1,3,5-triazine-2-carbonitrile,
4-(1,4'-Bipiperidin-1'-yl)-6-morpholin-4-yl-1,3,5-triazine-2-carbonitrile,
4-[4-(1H-Imidazol-1-yl)piperidin-1-yl]-6-morpholin-4-yl-1,3,5-triazine-2-carbonitrile,
4-[4-(4-Chlorobenzoyl)piperidin-1-yl]-6-morpholin-4-yl-1,3,5-triazine-2-carbonitrile,
4-[4-(5-Chloropyridin-2-yl)piperazin-1-yl]-6-morpholin-4-yl-1,3,5-triazine-2-carbonitrile,
4-Morpholin-4-yl-6-{[3-(2-oxopyrrolidin-1-yl)propyl]amino}-1,3,5-triazine-2-carbonitrile,
1-(4-Cyano-6-morpholin-4-yl-1,3,5-triazin-2-yl)-N,N-diethylpiperidine-3-carboxamide,
4-[4-(2-Methoxyphenyl)piperazin-1-yl]-6-morpholin-4-yl-1,3,5-triazine-2-carbonitrile,
N~2~~(4-Cyano-6-morpholin-4-yl-1,3,5-triazin-2-yl)-N~1~,N~1~~bis{4-[N-(4-cyano-6-morpholin-4-yl-1,3,5-triazin-2-yl)-N-isobutylglycyl]morpholin-3-yl}-N~2~~isobutylglycinamide,
4-Morpholin-4-yl-6-[(2-pyridin-3-ylethyl)amino]-1,3,5-triazine-2-carbonitrile,
4-{[2-(2-Furyl)ethyl]amino}-6-morpholin-4-yl-1,3,5-triazine-2-carbonitrile,
4-[(4-Chlorophenyl)amino]-6-(4-methylpiperazin-1-yl)-1,3,5-triazine-2-carbonitrile,
4-Azetidin-1-yl-6-[(4-chlorophenyl)amino]-1,3,5-triazine-2-carbonitrile,
4-[(4-Chlorophenyl)amino]-6-morpholin-4-ylpyrimidine-2-carbonitrile,
4-[(4-Methylcyclohexyl)amino]-6-morpholin-4-ylpyrimidine-2-carbonitrile,
4-(4-Chlorophenoxy)-6-morpholin-4-ylpyrimidine-2-carbonitrile,
4-[(4-Chlorophenyl)amino]-6-(dimethylamino)pyrimidine-2-carbonitrile,
4-[(1-Methylpiperidin-4-yl)amino]-6-morpholin-4-ylpyrimidine-2-carbonitrile,
4-(Cyclohexylamino)-6-morpholin-4-ylpyrimidine-2-carbonitrile,
4-[(4-Chlorophenyl)amino]-6-pyrrolidin-1-ylpyrimidine-2-carbonitrile,

4-[(6-Chloropyridin-3-yl)amino]-6-morpholin-4-ylpyrimidine-2-carbonitrile,
1-{6-[(4-Chlorophenyl)amino]-2-cyanopyrimidin-4-yl}-L-prolinamide,
4-(4-Aminopiperidin-1-yl)-6-[(4-chlorophenyl)amino]pyrimidine-2-carbonitrile,
4-[(4-Chlorophenyl)amino]-6-(4-pyrrolidin-1-ylpiperidin-1-yl)pyrimidine-2-carbonitrile,
4-[(4-Chlorophenyl)amino]-6-[(3-pyrrolidin-1-ylpropyl)amino]pyrimidine-2-carbonitrile,
tert-Butyl 4-{6-[(4-chlorophenyl)amino]-2-cyanopyrimidin-4-yl}piperazine-1-carboxylate,
4-[(4-Chlorophenyl)amino]-6-(cyclopropylamino)pyrimidine-2-carbonitrile,
4-[(4-Chlorophenyl)amino]-6-piperazin-1-ylpyrimidine-2-carbonitrile,
(2S)-N~2~~{6-[(4-Chlorophenyl)amino]-2-cyanopyrimidin-4-yl}-N~1~,N~1~~bis[4-(N-{6-[(4-chlorophenyl)amino]-2-cyanopyrimidin-4-yl}-L-leucyl)morpholin-3-yl]-L-leucinamide,
5-Chloro-4-[(4-chlorophenyl)amino]-6-morpholin-4-ylpyrimidine-2-carbonitrile,
4-[(4-Chlorophenyl)amino]-5-methoxy-6-piperazin-1-ylpyrimidine-2-carbonitrile,
4-[(4-Chlorophenyl)amino]-5-methoxy-6-morpholin-4-ylpyrimidine-2-carbonitrile,
4-[(3S)-3-Aminopyrrolidin-1-yl]-6-[(4-chlorophenyl)amino]-5-methoxypyrimidine-2-carbonitrile,
4-[(4-Chlorophenyl)amino]-6-{4-[3-(dimethylamino)propyl]piperazin-1-yl}-5-methoxypyrimidine-2-carbonitrile,
4-[(4-Chlorophenyl)amino]-6-(dimethylamino)-5-methoxypyrimidine-2-carbonitrile,
4-[(4-Chlorophenyl)amino]-5-methoxy-6-(3-oxopiperazin-1-yl)pyrimidine-2-carbonitrile,
1-{6-[(4-Chlorophenyl)amino]-2-cyano-5-methoxypyrimidin-4-yl}piperidine-3-carboxamide,
4-(4-Aminopiperidin-1-yl)-6-[(4-chlorophenyl)amino]-5-methoxypyrimidine-2-carbonitrile,
5-Amino-4-[(4-chlorophenyl)amino]-6-morpholin-4-ylpyrimidine-2-carbonitrile,
5-Amino-4-[(4-Chlorophenyl)amino]-6-(ethylamino)pyrimidine-2-carbonitrile,
and pharmaceutically acceptable salts thereof.

7. A compound of formula (I):



(I)

in which:

X is CA where A is hydrogen, halogen, CHR^2R^3, OR^2, NR^2R^3, SR^2;

R^2 and R^3 are independently hydrogen, C_{1-6} alkyl or C_{3-6} cycloalkyl both of which can optionally contain one or more O, S or NR^4 groups where R^4 is hydrogen or C_{1-6} alkyl, and can be optionally substituted by aryl, heteroaryl, NR^5R^6 where R^5 and R^6 together with the nitrogen atom to which they are attached form a 4-7 membered ring optionally containing a further O, S, NR^4, or R2 and R3 together with the nitrogen atom to which they are attached form a 4-7 membered ring optionally containing a further O, S, NR^4 group, or R2 and R3 are aryl or heteroaryl groups, both aryl and heteroaryl groups being optionally substituted by halogen, amino, hydroxy, cyano, nitro, carboxy, $CONR^7R^8$, $SO_2NR^7R^8$, SO_2R^4, trifluoromethyl, $NHSO_2R^4$, $NHCOR^4$, ethylenedioxy, methylenedioxy, C_{1-6} alkyl, C_{1-6} alkoxy, NR^7R^8 or SR^7 where R^7 and R^8 are independently hydrogen or C_{1-6} alkyl;

R and R^1 are independently a group $Y(CH_2)pR^9$ where p is 0, 1, 2 or 3 and Y is O or NR^{10} where R^{10} is hydrogen, C_{1-6} alkyl or C_{3-6} cycloalkyl;
and R^9 is hydrogen, C_{1-6} alkyl which can optionally contain one or more O, S or NR^4 groups where R^4 is hydrogen or C_{1-6} alkyl, or a 3 to 7-membered saturated ring optionally containing a carbonyl group, one or more O, S or N atoms, or an aryl or heteroaryl group containing one to four heteroatoms selected from O, S or N, the saturated ring, aryl and heteroaryl groups all being optionally substituted by halogen, amino, hydroxy, cyano, nitro, carboxy, $CONR^7R^8$, $SO_2NR^7R^8$, SO_2R^4, trifluoromethyl, $NHSO_2R^4$, $NHCOR^4$, ethylenedioxy, methylenedioxy, C_{1-6} alkyl, C_{1-6} alkoxy, SR^5 or $NR^{11}R^{12}$ where R^{11} and R^{12} are independently hydrogen, C_{1-6} alkyl or together with the nitrogen atom to which they are attached form a 5- or 6-membered saturated ring optionally containing a further O, S or NR^4 group;
or R/R^1 is a group $NR^{10}(CHR^{10})$ $CONR^2R^3$ or $NR^{10}(CH_2)_qCONR^2R^3$ where q is 1, 2 or 3;
or R/R^1 is a group $NR^{13}R^{14}$ where R^{13} and R^{14} together with the nitrogen atom to which they are attached form a 4 to 7-membered saturated ring optionally containing a carbonyl group, O, S or N atom and optionally substituted by C_{1-6} alkyl, amino, hydroxy, CO_2C_{1-6} alkyl, halogen, NR^5R^6, NR^7R^8, C_{1-6} alkyl$NR^{17}R^{18}$ where R^{17} and R^{18} are independently hydrogen or C_{1-6} alkyl, $CONR^{15}R^{16}$ where R^{15} and R^{16} are independently hydrogen or C_{1-6}

alkyl, or optionally substituted by aryl, phenoxy, COphenyl, or a heteroaryl group, the latter four groups being optionally substituted by halogen, amino, hydroxy, cyano, nitro, carboxy, $CONR^7R^8$, $SO_2NR^7R^8$, SO_2R^4, trifluoromethyl, $NHSO_2R^4$, $NHCOR^4$, ethylenedioxy, methylenedioxy, C_{1-6} alkyl, C_{1-6} alkoxy, SR^5 or $NR^{11}R^{12}$ where R^{11} and R^{12} are independently hydrogen, C_{1-6} alkyl or together with the nitrogen atom to which they are attached form a 5- or 6-membered saturated ring optionally containing a further O, S or NR^4 group;

and pharmaceutically acceptable salts or solvates thereof..

8. A compound of formula (I) as defined in claim 7 for use in therapy.

9. A pharmaceutical composition which comprises a compound of the formula (I) as defined in claim 7 or a pharmaceutically acceptable salt thereof and a pharmaceutically acceptable diluent or carrier.

10. A method for producing inhibition of a cysteine protease in a mammal, such as man, in need of such treatment, which comprises administering to said mammal an effective amount of a compound of the present invention as defined in claim 7 or a pharmaceutically acceptable salt thereof.